



ROLE OF OCCUPATIONAL THERAPY TO PROMOTE EFFECTIVE BREASTFEEDING IN HYPOXIC ISCHAEMIC ENCEPHALOPATHY SEQUELAE BABY: A CASE STUDY

Bandana Senapati¹, Dr. Munish Kumar Kakkar²
^{1,2}Occupational Therapist, Puducherry

ABSTRACT

Neonates with HIE sequelae exhibit poor oromotor skills and have difficulty in initiating and maintaining breastfeeding. Sometimes mother of baby finds difficulty to lactate or produce adequate breast milk or to maintain proper latching due to medical, psychological or due to lack of proper breastfeeding knowledge. Due to these factors associated with mother-infant dyad, effective breastfeeding can't be established. As direct breastfeeding has many health benefits for mother-infant dyad and it has high and positive impact on the development of children's oral skills and to facilitate the bonding relationship between mother and baby, it should be encouraged by healthcare professionals at any health care set up. As occupational therapists are well trained to provide oromotor stimulation to babies, motivate, and counsel mothers, promoting breastfeeding is definitely a challenging role for them. In this context, a case study was conducted for two weeks to find out the effectiveness of Occupational Therapy treatment in promoting breastfeeding.

KEYWORDS: HIE sequelae, Breastfeeding, Occupational Therapy

INTRODUCTION

Among birth complications, hypoxic ischemic encephalopathy (HIE) is one of the most serious birth complications affecting full term infants¹. As per global reports, it occurs in 1.5 to 2.5 per 1000 live births in most developed countries. Due to perinatal asphyxia and HIE mostly, many neonatal deaths occur in India. Those who survive remain with lifelong disability². It is a neonatal brain injury which occurs due to inadequate blood flow to the infant's brain because of hypoxic-ischemic event during the prenatal, perinatal or postnatal period. By the age of 2 years, approximately 60% of infants with HIE will die or have severe physical and mental disabilities³.

Prognosis associated with HIE is generally based on clinical grading. The outcome in mild HIE is generally considered to be normal but HIE with moderate and severe grades on Sarnat and Sarnat classification, have highest rates of motor deficit and mortality. Significant oromotor difficulties may be seen in infants with neurological conditions⁴. More specifically, sucking and swallowing are affected due to early brain injury. Due to hypoxia-ischemia event and inadequate muscular control in oral area, consequences of difficulties in breastfeeding may be exhibited in infants with neonatal encephalopathy. It may be related to neurological deficits such as asphyxia⁵. Early feeding problems can be noticed in

infants diagnosed with HIE. Weak or absent primitive reflexes like rooting and sucking could be some of the factors associated with these feeding difficulties and it differs in all three of stages of HIE^{6,7}.

The infant's ability to achieve a correct latch-on for breastfeeding is highly impacted by HIE sequelae⁸. It may furthermore inhibit state regulation, which may negatively influence an infant's ability to feed successfully⁹.

Breast milk is a complex biochemical fluid and 3,000 different components are found in breast milk. Certain bioactive components like cytokines, growth factors and hormones are found in it^{10,11}. Due to human milk nutrients, there is rapid brain, enteric and immunologic development occurs in neonates^{12,13,14}. Both mother-infant dyads get benefits because of breastfeeding practice. Many childhood communicable diseases, childhood lymphocytic leukaemia, lower incidence of type 1 diabetes are some of short term benefits where as lower incidence of non communicable disorders, obesity, diabetes type 2 and hypercholesterolemia are some of long-term benefits of breastfeeding. Reduced postpartum bleeding, natural weight reduction are some of immediate breastfeeding effects for the mother. It has a contraceptive effect which helps natural spacing of children. Maternal premenopausal breast and ovarian



cancer, obesity and its complications can be reduced due to breastfeeding¹⁵.

Due to oromotor issues in HIE diagnosed baby, long NICU stay, physical separation of mother-infant dyad, frustration, depression, low breastfeeding self efficacy and sometimes inadequate physical and psychological support by family and healthcare personnel, exclusive and effective breastfeeding can't be established. As Occupational Therapists are part of transdisciplinary team, they can take the responsibility aimed at promoting, and supporting breastfeeding at Out Patient Department for continuation of exclusive and effective breastfeeding at least up to 1 year for babies.

Although nurses and lactation consultants are well trained to support and promote breastfeeding, occupational therapists are also well positioned to become role players in this field. There are many studies which identify the role of Occupational Therapist at NICU to facilitate oromotor skills in babies to improve oromotor skills. Minimal researches have been done on breastfeeding as a method of feeding at NICU or Out Patient Department in the occupational therapy literature.

Therefore, this study was conducted to find out the effectiveness of Occupational Therapy to promote effective breastfeeding in a baby with hypoxic ischemic encephalopathy sequelae.

METHODOLOGY

Aims and objectives

- To find out the effectiveness of Occupational Therapy Intervention to facilitate effective breastfeeding in a baby with hypoxic ischemic encephalopathy sequelae.
- To assess and compare the pretest and posttest level of LATCH score.
- To assess and compare the pretest and posttest level of weight of baby.

Subject and Setting

The study was conducted in a private centre, Puducherry. A 20 days old male baby diagnosed as HIE (Stage I, Sarnat & Sarnat classification) by neonatologist was selected for this study. Baby was medically stable and referred to Occupational Therapy department for developmental therapy post discharge from NICU. Mostly baby was on formula feeding and less amount of expressed breast milk in paladai was given to the baby.

LATCH Assessment Tool was used to get information regarding breastfeeding from the mother. The questionnaires were translated in mother's known language. Assistance from care takers was allowed to fill up the questionnaire when mother found any difficulty in understanding. Weight of

baby by digital weighing machine and LATCH Assessment Tool were used as outcome measures.

Procedure

The mother of the baby was explained about the purpose of this present study in her language and informed consent was taken from her. Complete demographic data, maternal history, birth history, medical history along with breastfeeding history were documented using a proper previously prepared questionnaire. The mother was asked to breastfeed baby. Mother-infant dyad was observed completely during breastfeeding trial. Breastfeeding observation form, adapted from WHO/UNICEF, was used to document breastfeeding in detail. Complete motor evaluation of baby was done to document any physical problems associated with baby. Weight of baby and LATCH Assessment Tool were used at baseline. Based on LATCH score at baseline, Occupational Therapy treatment protocol was planned and implemented for two weeks for mother-infant dyad. During the breastfeeding training session, mother was taught about the importance of exclusive and how to establish effective breastfeeding.

The mother of the baby was asked to come for therapy regularly for seven days for first week and then on 10th day and 14th day. Training session as part of Occupational Therapy program was focused on mainly proper guidance, proper techniques of breastfeeding such proper attachment or latching of baby at breast, correct body posture or proper ergonomics of body while breastfeeding, counselling and confidence development of mother

Body Position of mother-infant dyad, responses of baby during breastfeed trial, emotional bonding between baby and mother, suckling response of baby and time spent for suckling were observed during breastfeeding and documented. Oral stimulation in form of perioral or intraoral stimulation was given to the baby before each breastfeeding trial. Even mother was suggested to include certain diets to increase lactation.

After each oromotor stimulation given to baby, mother was encouraged to initiate breastfeeding by following proper latching and other important techniques associated with effective breastfeeding. Initially baby was properly placed at mother's breast and nipple of mother was put into baby's mouth. When baby was tired or taking his face away from breast, mother was instructed to express milk as much as possible and to give baby in paladai. In between baby was given formula as suggested by paediatrician when there was not enough breast milk from the mother.. The baby was fed at interval of 2 to 3 hours or when the baby demanded for milk. On 5th, 10th and 14th day, weight of baby and LATCH Assessment Tool were used to

find out any changes in weight and components of LATCH Score respectively. The mother was

suggested to practice and to implement learned techniques during breastfeeding at home too.

RESULTS

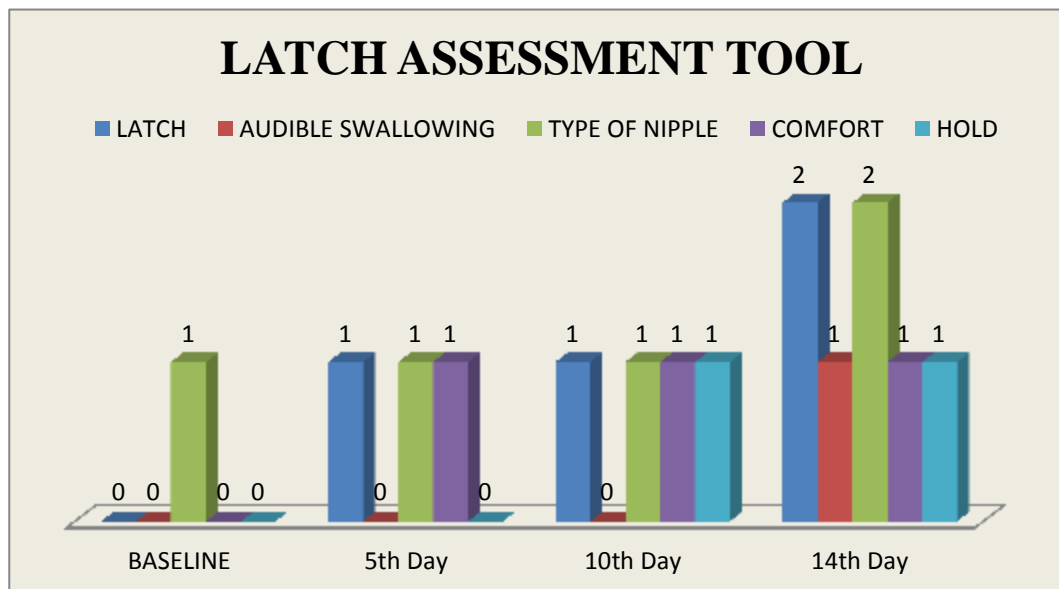


Fig -1

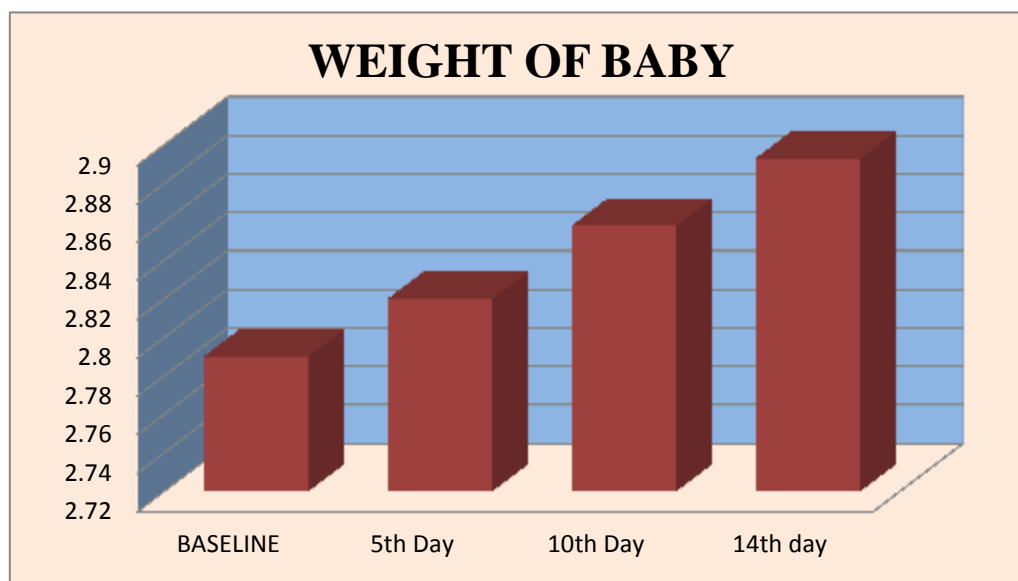


Fig-2

DISCUSSION

The main aim of this single case study was to find out the effectiveness of Occupational Therapy intervention in promoting and facilitating effective breastfeeding in a baby with HIE sequelae. As so many physical and psychological health benefits are associated with breastfeeding for mother-infant dyad, positive impact on the development of children's oral skills¹⁶ and to promote a strong and emotional bond between mother-infant dyad, it is very necessary for

health care providers to promote exclusive and effective breastfeeding to maximum possible extent up to six months and to continue at least for 2 years along with complementary feeding^{17,18,19}.

After assessing LATCH score at baseline, it was found that there was poor effective breastfeeding and mainly in the components of Latch, Audible swallowing, comfort and Hold. It could be due to baby's poor suck and swallowing skills because of oromotor issues associated with HIE



sequelae. Baby was easily getting tired after few sucking efforts. Low muscle tone was also one of the factors for fatigue, poor suck and swallowing. Mother's inefficiency or lack of correct breastfeeding knowledge, self-efficacy for breastfeeding and motivation was also found to be low. The mother had certain issues in relation to anatomy of nipple and mother was not following correct position to establish proper latch. Due to improper latching and certain physical issues of baby, effecting breastfeeding could not be established.

Fig-1 suggests that after occupational therapy intervention, there was improvement in LATCH scoring system on 5th day, 10th day and at 14th day. There was improvement in components of LATCH Assessment Tool (Latching, Auditory stimulation, Comfort and Hold). It could be due to techniques used as part of Occupational Therapy to stimulate oromotor area, techniques of proper latching and motivation to mother. Mother was also continuously encouraged to initiate and continue breastfeeding.

This present study is supported by a cross-sectional study which was conducted by Pooja et al., at rural health training centre in Nagpur in 2010. Majority of mothers could be able to keep their babies in proper breastfeeding position after breastfeeding education training to postnatal mothers²⁰. Another study done by Chandran et al stated that, intervention group showed statistical significant improvement in sucking frequency, LATCH scores, and weight in babies after structured oromotor stimulation²¹.

Fig- 2 suggests there is improvement in weight of baby as compared to baseline score. This weight gain can be attributed to oromotor stimulation provided to baby that improved the strength of the muscles required for sucking and swallowing and henceforth there is improvement in weight of babies. This is supported by a study conducted by Bala, et al. who found significant increase in weight-gain per day and the duration of gavage feeding was decreased in infants in PIOMI group than infants in sham intervention group by structured oromotor stimulation²². Another study reported by Einarsson LM et al. that stroking of the cheeks could enhance sucking rate and increase in volume intake during an oral feeding session²⁴.

CONCLUSION

From the above study, it was concluded that HIE diagnosed babies exhibit premature reflexes and feeding issues, which can be noticed in breastfeeding behaviour of sucking and swallowing and inadequate knowledge of breastfeeding and psychological issues can lead to ineffective breastfeeding. The present study also concluded that Occupational Therapy intervention for both mother-infant dyads have

significant impact on effective breastfeeding and weight of babies. So, Occupational Therapist can promote exclusive and effective breastfeeding not only at NICU but also at OPD level being part of transdisciplinary team.

LIMITATION

- Single case study
- Duration of study is small

REFERENCES

1. Schiariti V, Klassen AF, Hoube JS, et al. Perinatal characteristics and parents' perspective of health status of NICU graduates born at term. *J Perinatol.* 2008; 28:368–376.
2. Lawn JE, Blencowe H, Oza S et al. Every newborn: progress, priorities, and potential beyond survival. *The Lancet* 2014; 384:189–205.
3. Long M, Brandon DH. Induced hypothermia for neonates with hypoxic-ischemic encephalopathy. *Journal of Obstetrics Gynecology Neonatal Nursing.* 2007; 36:293–298. Pierrat V, Haouari N, Liska A et al. Prevalence, causes, and outcome at 2 years of age of newborn encephalopathy: population based study. *Archives of Disease in Childhood: Fetal Neonatal Edition.* 2005; 90: 257–261.
4. Genna CW, LeVan Fram J, Sandora L. Neurological issues and breastfeeding In Genna C.W. (Ed.), *Supporting sucking skills in breastfeeding infants.* Burlington, MA: Jones & Bartlett Learning. 2013; 2: 305–358.
5. Reilly S, Skuse D, Poblete X. Prevalence of feeding problems and/or oral motor dysfunction in children with cerebral palsy: a community survey. *J Pediatr.* 1996; 129: 877–81.
6. Shalak LF, Laptook AR, Velaphi SC, Perlman JM. Amplitude-integrated electroencephalography coupled with an early neurologic examination enhances prediction of term infants at risk for persistent encephalopathy. *Pediatrics,* 2003; 111: 351–357.
7. Horn AR. Early prediction of hypoxic ischaemic encephalopathy in newborn infants in a resource-limited setting. Unpublished doctoral dissertation, University of Cape Town, South Africa. 2013.
8. Wolf LS, Glass RP. *Feeding and swallowing disorders in infancy. Assessment and management.* Tucson, AZ: Therapy Skills Builders. 1992.
9. Walker M. *Breastfeeding management for the clinician. Using the evidence. (4th edn).* Burlington, MA: Jones & Bartlett Learning. 2017
10. Savino F, Liguori SA, Sorrenti M, Fissore MF, Oggero R. Breast Milk Hormones and Regulation of Glucose Homeostasis. *Int J Pediatr.* 2011.
11. Mosca F, Gianni ML. Human Milk: Composition and Health Benefits. *Pediatr Med Chir.* 2017; 39(2): 155.
12. He Y, Lawlor NT, Newburg DS. Human Milk Components Modulate Toll-Like Receptor-



- Mediated Inflammation. Adv Nutr .2016; 7(1): 102-111.*
13. Nurliyana AR, Mohd Shariff Z, Mohd Taib MN, Gan WY, Tan KA. *Early Nutrition, Growth and Cognitive Development of Infants from Birth to 2 Years in Malaysia: A Study Protocol. BMC Pediatr.2016; 16(1): 160.*
 14. Kumar RK, Singhal A, Vaidya U, Banerjee S, Anwar F, Rao S. *Optimizing Nutrition in Preterm Low Birth Weight Infants-Consensus Summary Front Nutr.2017;4:20.*
 15. Labbok MH. *Effects of breastfeeding on the mother. Pediatric Clinics of North America 2001; 48: 143–158.*
 16. da Silveiral Leila , Pradel L S, Ruedell AM .*Influence of breastfeeding on children's oral skills Rev Saúde Pública. 2013; 47(1).*
 17. Deoni S, Dean D, Joelson S, et al. *Early nutrition influences developmental myelination and cognition in infants and young children. Neuroimage.2018; 178: 649–659.*
 18. American Academy of Pediatrics, Section on Breastfeeding. *Breastfeeding and the use of human milk. Paediatrics, 2012; 129: e827–e841.*
 19. World Health Organization (WHO) .*United Nations Children's Fund (UNICEF). Global Breastfeeding Scorecard, 2017—Tracking Breastfeeding Policies and Programmes. Global Breastfeeding Collective.WHO/UNICEF.*
 20. Bhandari P et al. *Effectiveness of information education and communication on knowledge and Practice regarding latch on technique for breastfeeding among primipara Mothers at selected hospitals, Bangalore .International Journal of Recent Scientific Research.2016; 7(10): 13543-13546.*
 21. Chandran R, Alagesan J. *Sucking Behavior among Neonates with Immature Sucking: An Experimental Protocol. International Journal of Surgery Protocols; 2021; 25(1), pp. 129–134.*
 22. Bala P, Kaur R, Mukhopadhyay K, Kaur S. *Oromotor stimulation for transition from gavage to full oral feeding in preterm neonates: A Randomized controlled trial. Indian Pediatr. 2016;53:36-8*